Remarks:

Claims 1, 2, 4-13, 19 –23, 38, and 45-60 are under examination. Claims 1, 17, 25, 26, 27, 34, 40,42, 45, and 56 are in independent form. Claims 14-16, 25, 27-33, and 42-44 are withdrawn as directed to a non-elected invention. Claims 3, 17, 18, 24, 26, 34-37, and 39-41 are cancelled by this amendment. Applicants thank the Examiner for partial withdrawal of the restriction requirement.

Anticipation Rejections

Claims 1, 2, 26, 34, 35 and 39 stand rejected under 35 USC 102(b) as anticipated by US Pat. No. 5,475,775 to Kragl et al. ("Kragl"). Claims 26, 34, 35, and 39 are cancelled. Applicants respond as follows with regard to claims 1 and 2.

Kragl describes a method for forming a basic unit assembly 13 that includes an optical component 2, an optical fiber 10, and a waveguide 20 between the component and the optical fiber.

Kragl describes a two step process - - in the first step, component 2 is positioned in a mold plate 3 and embedded into a molded material 14. Mold plate 3 includes holding devices 4 for positioning component 2 and also includes mold features 5 and 6 for forming grooves in molded material 14. In the second step, basic unit 13, which includes component 2 embedded in molded material 14, is removed from mold plate 3. Waveguide channel 9 in basic unit 13 is filed with a polymer, and a cover 7 is placed on top of molded material 14 to hold in optical fiber 10.

Thus, in one step, Kragl fixes the position of component 2 in the molded material 14 by molding material 14 around component 2 using mold plate 3, and in the next step, outside of mold plate 3, Kragl adds the optical fiber and forms the waveguide material.

Amended claim 1 recites providing a mold, positioning a first component in the mold, positioning a second component in the mold; and applying a formable material into the mold to form a waveguide between the first and second components, the waveguide forming an optical path between the first component and the second component. As described above, Kragl does not place component 2 and optical fiber 10 into mold plate 3 and form a waveguide between

them. Kragl places component 2 in mold plate 3 and creates molded material 14 in which component 2 is embedded. Molded material 14 is removed from mold plate 3 and functions as a second mold for forming optical waveguide 20. Optical fiber 10 is placed into a groove 12 in molded material 14, and waveguide 20 is formed. Kragl uses two different molds, one for fixing component 2 and one for forming waveguide 20. He does not position optical fiber 10 into mold plate 3, and he does not position component 2 in molded material 14, so he does not perform the steps of claim 1. Kragl requires an extra step, and is therefore less efficient than the invention of claim 1.

Applicant submits that claim 2 is allowable over Kragl for reasons described above with respect to parent claim 1.

Claims 1, 2, 17, 18, 26, 34, 35, 39-41, 45 and 51 stand rejected under 35 USC 102(b) as anticipated by US Pat. No. 5,308,555 to Blyler, Jr. et al. ("Blyler"). Claims 17, 18, 26, 34, 35, and 39-41 are cancelled. Applicants respond as follows with regard to claims 1, 2, 45, and 51.

Amended claim 1 teaches forming an optical assembly in which "at least one of the first or second components including a laser or other active optical component." Blyler teaches uses optical fibers as a "plug" to make a mold to join optical fibers. Col. 1, lines 34-38. Blyler states:

> The invention makes use of the following facts: the outer diameter of a silica optical fiber varies only by approximately +/- 1 micron and the outer surface of a silica optical fiber has an optical finish. Thus by using optical fiber to fabricate molds, molds can be produced which have the required accuracy and finish.

The special qualities of silica optical fibers that Blyler relies on are not present in active components, which are typically semiconductor devices and cannot be used as a "plug" to form a mold. Applicants submits that since the method of Blyler is not applicable to laser or other active optical components, claim 1 is patentable over Blyler. Applicants submit that claim 2 is patentable for the reasons recited with respect to claim 1.

With regard to claims 45 and 51, claim 45 recites removing the waveguide from the

precision mold. Applicants submit that the mold taught by Blyler becomes a part of the final structure, and that the waveguide is not removed from the mold.

Claim 34, 35, 38, and 39 stand rejected under 35 USC 102(b) as anticipated by US Pat. No. 5,013,495 to Noba et al. ("Noba"). Claims 34, 35, and 39 are cancelled. Claim 38 is rewritten into independent form, and amended to clarify that the light is transmitted through connecting surface being oriented at an angle of between 0 degrees and 55 degrees from a normal to the optical axis. This amendment is supported in the specification in paragraph 1085. FIG. 17 of Noba shows prior art that uses a mechanical coupling and not a formed waveguide. Also, FIG. 17 shows that the core 6a extends from hole 9a and not at an angle 0 degrees and 55 degrees.

Obviousness rejections

Claims 4-13 stand rejected under 35 USC 103(a) for obviousness over Kragl in view of US Pat. No 4,466,697 to Daniel ("Daniel"). Applicants submit that claims 4-13 are patentable for reasons described above with respect to parent claim 1. Moreover, Kragl does not teach removing the first component, second component, and waveguide from the mold. The waveguide is molded into the basic unit 13, and component 2 and waveguide 9 are not then separated for basic unit 13. Also, applicants submit that Daniel teaches using a thin nylon coating to protect an optical fiber and not a support structure.

Claims 4-13, 19-23, and 46-50 stand rejected under 35 USC 103(a) for obviousness over Blyler in view of Daniel. Applicants submit that claims 4-13, 20-23, 46-50 are patentable for reasons described above with respect to the primary reference, Blyler. Neither Blyler nor Daniel teaches removing the components and waveguide from a mold. Claim 19 is rewritten into independent form and recites applying a formable classing over the optical waveguide. While it is conventional to form an optical fiber with a cladding by extrusion, Daniel does not teach or suggest the claimed invention.

Claims 36 and 37 stand rejected under 35 USC 103(a) for obviousness over Noba in view of U.S. Pat. No. 5,898,810 to Devens, Jr. et al. Claims 36 and 37 are cancelled.

Application No. 09/954,717
Response Dated November 16, 2004
Response to Office Action of June 17, 2004

New claims 52-55 are supported in the specification on paragraph 1045, 1085, and 1087, and claim 56 is supported in paragraph 1083. Kragl uses the outside edge of a component to align a component in a mold. The tolerance on the outside edge of a component is typically not as tight as the tolerance of electrical contacts or other positional references, which can be created using a lithographic process when the component is fabricated or created later with high precision. As described in paragraph 1004, the core of a single mode fiber is much smaller than the core of a multi mode factor, and therefore requires a more precise alignment. Kragl does not teach aligning a single mode fiber.

New claims 56-60 are similar to original claim 4, rewritten into independent form, and its dependent claims 5-8.

Applicants submit that the application is allowable for reasons described above and respectfully requests reconsider and allowance.

Respectfully submitted,

16 Nov. 2004
Date

By: _____

Michael O. Scheinberg
Pat. Reg. No. 36,919
P.O. Box 164140
Austin, TX 78716-4140
Tel: (512) 328-9510
Fax: (512) 306-1963